

Claims

1. Low-friction seal, with a sealing ring (44) that is accommodated in a hydraulic cylinder, namely with axial and radial clearance in a groove (30; 76) in one of two surfaces that need to be sealed relative to one another and that move relative to one another in a translational fashion, characterized by the fact that the sealing ring (44) is arranged opposite to the other surface to be sealed with its cylindrical inner surface (46) that protrudes from the groove (30; 76), namely with a sliding fit, and by the fact that means (36, 37) for preventing a pressure propagation to the bottom (38; 78) of the groove are provided between the sidewall (34; 80, 82) of the groove on the side of the pressure chamber and the sealing ring (44), namely in such a way that, when the seal is charged with a pressure medium, a propagation of the pressure medium only takes place between the cylindrical inner surface (46) of the sealing ring (44) and the other surface to be sealed, with a nearly continuous decrease in pressure taking place over the length of the sealing ring (44).

2. Seal according to Claim 1, characterized by the fact that the means (36, 37) for preventing a pressure propagation contain a sealing element (36) which is effective between the sealing ring (44) and the sidewall (34) of the groove on the side of the pressure chamber.

3. Seal according to Claim 2, characterized by the fact that the means (36, 37) for preventing a pressure propagation also contain a formed part (37) that acts upon the sealing element (36) in the axial direction.

4. Seal according to Claim 2 or 3, characterized by the fact that the sealing element (36) consists of a plastic sealing ring, the ring width of which is smaller than the ring width of the sealing ring (44) accommodated in the groove (30), and the thickness of which is greater than the width of the gap (39) between the sealing ring (44) and the sidewall (34) of the groove on the side of the pressure chamber.

5. Seal according to Claim 3 or 4, characterized by the fact that the formed part (37) consists of a flexible ring, in particular, an elastic ring of plastic and/or rubber.

6. Seal according to one of Claims 3-5, characterized by the fact that the formed part (37) is arranged in an axially opening annular groove (35') in the sidewall (34) of the groove and presses the sealing element (36) against the sealing ring (44).

7. Seal according to one of Claims 3-5, characterized by the fact that the formed part (37) is arranged in an axially opening annular groove (35) in the sealing ring (44) and presses the sealing element (36) against the sidewall (34) of the groove.

8. Seal according to Claim 6 or 7, characterized by the fact that, when charging the seal with pressure, the formed part (37) is deformed in such a way that the pressing force of the formed part (37) against the sealing element (36) is increased.

9. Seal according to one of Claims 1-8, characterized by the fact that a friction-reducing intermediate disk (60) is inserted between the sidewall (40) of the groove situated distant from the pressure chamber and the sealing ring (44).

10. Seal according to one of Claims 1-8, characterized by the fact that a hydrostatic alleviation is provided between the sidewall (40) of the groove situated distant from the pressure chamber and the sealing ring (44).

11. Seal according to one of Claims 1-8, characterized by the fact that, if two pressure chambers (66, 68) are axially arranged to both sides of the groove (76), means (36a, 37a) for preventing a pressure propagation to the bottom (78) of the groove are provided between both sidewalls (80, 82) of the groove and the sealing ring (44a), and by the fact that at least one drainage channel (90,92) for diverting pressure medium that was admitted into the groove (76) is arranged between the means (36a, 37a) for preventing a pressure propagation.

12. Seal according to Claim 11, characterized by the fact that the at least one drainage channel (90, 92) connects the groove (76) to the pressure chamber (66, 68) or to an essentially nonpressurized space.

13. Seal according to Claim 11, characterized by the fact that one respective drainage channel (90, 92) which connects the pressure chamber (66, 68) to the groove (76) is provided behind the means (36a, 37a) for preventing a pressure propagation on the side of the pressure decrease, with said drainage channel containing a valve (91, 93) that acts opposite to the direction in which the pressure medium drains from the groove (76) into the pressure chamber (66, 68).

14. Hydraulic cylinder, with a piston rod (16) that is guided in a guide element (12, 70), with a groove (30, 76) being arranged in the guide element (12, 70), and with a sealing ring (44) for sealing leaks between the piston rod (16) and the guide element (12, 70) being accommodated in the aforementioned groove, characterized by the fact that the sealing ring (44) is arranged opposite to the other surface to be sealed with its cylindrical inner surface (46) that protrudes from the groove (30; 76), namely with a sliding fit, and by the fact that means (36, 37) for preventing a pressure propagation to the bottom (38; 78) of the groove are provided between the sidewall (34; 80, 82) of the groove on the side of the pressure chamber and the sealing ring (44), namely in such a way that, when the seal is charged with a pressure medium, a propagation of the pressure medium only takes place between the cylindrical inner surface (46) of the sealing ring (44) and the other surface to be sealed, with a nearly continuous decrease in pressure taking place over the length of the sealing ring (44).